



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/517,748	12/13/2004	Jun Ma	100647-9330	5924
31013 7590 07/08/2009 KRAMER LEVIN NAFTALIS & FRANKEL LLP INTELLECTUAL PROPERTY DEPARTMENT 1177 AVENUE OF THE AMERICAS NEW YORK, NY 10036				
			EXAMINER VDAYAKUMAR, KALLAMBELLA M	
			ART UNIT 1793	PAPER NUMBER
			NOTIFICATION DATE 07/08/2009	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

klpatent@kramerlevin.com

Office Action Summary

Application No.

10/517,748

Applicant(s)

MA ET AL.

Examiner

KALLAMBELLA VIJAYAKUMAR

Art Unit

1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 April 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-23, 26-28, 30-35, 76-78, 81, 82 and 84-89 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21-23, 26-28, 30-35, 76-78, 81, 82 and 84-89 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

- A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 04/23/2009 has been entered.
- Claim-21 was amended. Claims 21-23, 26-28, 30-35, 76-78, 81-82, and 84-89 as amended are currently pending with application.

Response to Amendment

- The declaration under 37 CFR 1.132 filed by Tennent is sufficient to overcome the rejection of claims based upon Zhou (US 6,442,450), and Shibuta (US 5,853,877); and the prior art by Glatkowski et al (US 7,118,693).

Response to Arguments

- Applicant's arguments with respect to claims in view of the amendments have been fully considered but are moot in view of the new ground(s) of rejection. The prior art by Shibuta teaches all the method steps except the filtering step and silent about the properties of the coating liquid; and a new rejection has been made with a new combination of references with this reference.

Claim Rejections - 35 USC § 102

Claim Rejections - 35 USC § 103

- The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(c) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

- The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

1. Claims 21-22, 28, 33-34, 76-77, 82, 87-88 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Clarke et al (US 2003/0026754).

Clarke et al teach a method of making the stable aqueous dispersion of carbon nanotubes that are free of carbon coating in double distilled water containing a dispersant. The bundled SWCNT was added to an aqueous solution containing the dispersal agent and appropriately mixed (e.g., by mechanical agitation or blending or inversion blender <i.e. milling>) to ensure adequate interaction and coating of dispersal agent molecules with SWCNT structures (P-0033, 0039, 0049). The dispersion was filtered through an appropriately sized filter with 0.05-0.2 micron filtration, and a 0.2 micron filter to remove contaminants without caking (P-0033). The dispersants were cyclodextrins, saponins (P-0030), TRITON-100, NP-40 and Poloxamer (surfactant/polymers) (P-0028). The purified SWNT had a length of 150-250 nm (Abstract; 0011). The dispersants maintained the bundle or rope dispersal of the SWNT in the solution (P-0027). The SWNT's were dispersed at a concentration of 0.1 mg/ml to 50 mg/ml (P-0030).

With regard to the viscosity and rheology characteristics of the prior art solution, it is either same or substantially same as that claimed by the applicants, and it will possess same characteristics (See Spec: Pg 10-11). All the limitations of the instant claims are met.

The reference is anticipatory.

In the alternative that the disclosure by Clarke et al be insufficient to anticipate the instant claims, the instant claimed method steps nonetheless would have been obvious to a person of ordinary skilled in the art over the disclosure because the reference teaches each of the claimed ingredients within the composition and a method of making it, and it has the same common

utility as coating solution (Spec, Pg-10). The burden is upon the applicant to prove otherwise. In re Fitzgerald, 619 F.2d 67, 205 USPQ594 (CCPA 1980). [MPEP 2112 [R-3-V].

2. Claims 21-23, 26-28, 30-35, 76-78, 81-82, 84-89 are rejected under 35 U.S.C. 103(a) as obvious over Shibuta et al (US 5,853,877) in view of Clarke et al (US 2003/0026754).

Shibuta teaches coating solutions and film comprising a dispersion of oxidized Graphitic fibrils/carbon microfibers with a OD of 3.5-70 nm and an aspect ratio of greater than 5 dispersed in a polar solvent (Abstract; Cl-9, Ln 5-6). Shibuta teaches the fibrils to exist in the form of aggregates/BN and dispersing the fibrils in a medium by milling using mechanical dispersive technology such as ball mill (Cl-3, Ln 26-46), and the dispersed solution being used as a coating solution for forming a conductive film (ink) (Cl-5, Ln 47-50). The making of dispersion further included stirring fibrils in a polar solvent either mechanically or by ultrasonic and with milling (Cl-6, Ln 1-10). The polar solvents included water, alcohols, DMF and DMSO (Cl-5, Ln 54-64). The binders included cellulose acetate and acrylics (Cl -7, Ln 3-10). The fibrils meet the limitation of SWNT and MWNT in the claims. The coating solution contained 0.001-5 Wt% fibrils in the solution (Cl-6, Ln 11-21).

Shibuta teaches all the limitations of the process steps except filtering the dispersion/ink and silent about the characteristics of the dispersion/ink.

In the analogous art, Clarke et al teach making an aqueous dispersion of carbon nanotubes by adding bundled SWCNT to an aqueous solution containing the dispersal agent and appropriately mixed (e.g., by mechanical agitation or blending or inversion blender <i.e. milling>) to ensure adequate interaction and coating of dispersal agent molecules with SWCNT

structures (P-0033, 0039, 0049). The dispersion was filtered through an appropriately sized filter with 0.05-0.2 micron filtration and a 0.2 micron filter to remove contaminants without caking (P-0033). The dispersants were cyclodextrins, saponins (P-0030), TRITON-100, NP-40 and Poloxamer (surfactant/polymers) (P-0028). The disclosure by Clarke as set forth in rejection-1 is herein incorporated.

It would have been obvious to a person of ordinary skilled in the art to filter the dispersions of Shibuta over the teachings of Clarke et al to remove larger particles with predictable results and reasonable expectation of success, because Shibuta is suggestive of its use in ink-jet printing and concerned about the clogging of the blockages in nozzles (Shibuta: Cl-11, Ln 5-10; 12-15).

With regard to the viscosity and rheology characteristics of the prior art solution, it is similar to that claimed by the applicants, and it is expected to possess similar characteristics (See Spec: Pg 10-11).

Conclusion

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KALLAMBELLA VIJAYAKUMAR whose telephone number is (571)272-1324. The examiner can normally be reached on M-F 07-3.30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 5712721358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/KMV/
July 01, 2009\

/Stanley Silverman/
Supervisory Patent Examiner, Art Unit 1793